

AMENDMENT

In the specification, please delete line 30 on page 69:

~~What is claimed is:~~

In the specification, please replace line 1 on page 70 with the following:

CLAIMS What is claimed is:

The following Listing of the Claims will replace all prior versions and all prior listings of the claims in the present application:

Listing of The Claims:

1. (Currently amended) A method for assembling a modulatable fusion molecule, comprising:

inserting randomly ~~randomly inserting~~ an insertion sequence into an acceptor sequence, wherein the insertion sequence and the acceptor sequence each comprise a state, thereby generating a fusion molecule; and

selecting a fusion molecule wherein insertion couples the state of the insertion sequence to the state of the acceptor sequence.

2. (Original) The method according to claim 1, wherein the state of the insertion sequence is modulated.

3. (Original) The method according to claim 2, wherein the state of the insertion sequence is modulated in response to a change in the state of the acceptor sequence.

4. (Original) The method according to claim 1, wherein the state of the acceptor sequence is modulated.

5. (Original) The method according to claim 4, wherein the state of the acceptor sequence is modulated in response to a change in the state of the insertion sequence.

6. (Original) The method according to claim 1, wherein the fusion molecule comprises a new state.

7. (Currently amended) A method for assembling a fusion molecule comprising an insertion site, the method comprising:

~~inserting randomly~~ randomly inserting an insertion sequence into an acceptor sequence, thereby generating a fusion molecule, wherein the insertion sequence and the acceptor sequence each comprise a state;

generating a duplication, deletion, or substitution, at the insertion site in the acceptor sequence; and;

selecting a fusion molecule wherein insertion couples the state of the insertion sequence to the state of the acceptor sequence.

8. (Original) The method according to claim 7, wherein the generating step occurs prior to the inserting step.

9. – 13. (Cancelled)

14. (Currently amended) A The method of claim 1 wherein the ~~for assembling a multistable fusion molecule which~~ can switch between at least an active state and a less active state, ~~comprising:~~

~~using nuclease treatment to randomly inserting an insertion sequence into an acceptor sequence, thereby generating a fusion molecule, wherein either the insertion sequence or the acceptor sequence comprises a state; and wherein the respective other sequence is responsive to a signal;~~

~~selecting a fusion molecule, wherein the state is coupled to the signal, such that the fusion molecule switches state in response to the signal.~~

15. – 25. (Cancelled)

26. (Withdrawn) A method for modulating a cellular activity, comprising:

providing a fusion molecule generated according to the method of claim 1 to a cell, wherein a change in state of at least the insertion sequence or the acceptor sequence modulates a cellular activity, and wherein the change in state which modulates the cellular activity is coupled to a change in state of the respective other portion of the fusion molecule; and

changing the state of the respective other portion of the fusion molecule, thereby modulating the cellular activity.

27. – 29. (Cancelled)

30. (Withdrawn) A method for modulating a molecular pathway in a cell, comprising:

providing a fusion molecule to the cell, the fusion molecule comprising an insertion sequence and an acceptor sequence,

wherein the activity of the insertion sequence and acceptor sequence are coupled, and responsive to a signal, and

wherein the activity of either the insertion sequence or the acceptor sequence modulates the activity or expression of a molecular pathway molecule in the cell; and

exposing the fusion molecule to the signal.

31. (Cancelled)

32. (Withdrawn) A fusion molecule, comprising:

an insertion sequence and an acceptor sequence,

wherein either the insertion sequence or the acceptor sequence transports the fusion molecule intracellularly and wherein intracellular transport of the fusion molecule is coupled to binding of the fusion molecule to a bio-effective molecule.

33. – 37. (Cancelled)

38. (Withdrawn) A sensor molecule, comprising:

an insertion sequence and an acceptor sequence,

wherein either the insertion sequence or acceptor sequence binds to a target molecule,

wherein the respective other sequence generates a signal in response to binding, and further,

wherein the acceptor sequence comprises a deletion, duplication, and or substitution at the insertion site.

39. (Withdrawn) A library, comprising a plurality of library members,

wherein each library member comprises a first nucleic acid sequence encoding a first polypeptide having a first state, the first nucleic acid sequence being inserted into a second nucleic acid sequence encoding a second polypeptide having a second state, at a random insertion site in the second nucleic acid sequence, and wherein the library comprises members comprising insertions with deletions at the insertion site, insertions with tandem duplications at the insertion site, and insertions with neither duplications nor deletions.

40. (Cancelled)

41. (Withdrawn) A method for generating a conditional heterodimer, comprising:

providing a plurality of randomly bisected molecules;

each bisected molecule comprising a first half and a second half, wherein the first and second half are fused to first and second dimerization domains respectively, and wherein a function of the bisected molecule is altered by bisection,

selecting for restoration of function of a bisected molecule in response to a signal.

42. – 44. (Cancelled)

45. (New) The method of claim 1, wherein the inserting randomly comprises one or more of a method selected from: nuclease treatment, mechanical shearing, chemical treatment or radiation treatment.

46. (New) The method of claim 1, 7, 14, or 45, wherein the method further comprises generating a duplication, deletion, or substitution at the insertion site in the acceptor sequence.

47. (New) The method of claim 45, wherein nuclease treatment comprises digestion with a 3' to 5' exonuclease.